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OPERABLE UNIT 3

MISCELLANEOUS SMALL STRUCTURES DECONTAMINATION AND DISMANTLEMENT PROJECT

TASK ORDER #432 COMPLETION REPORT

OCTOBER 1999

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

U. S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

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1.0 INTRODUCTION

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Task Order #432 was implemented under the authority of the Miscellaneous Small Structures (MSS) Implementation Plan for Above-Grade Decontamination and Dismantlement (D&D) (DOE 1998) and the Task Order implementation schedule provided to the regulatory agencies on July 2, 1999. Task Order #432 included the D&D of the following components, in the order of field implementation:

- Electric Utility Tower
- Component 2G – Hot Side Ore Conveyor
- Component 39B – Waste Oil Decant Shelter
- Building 63 – KC-2 Warehouse
- Component 10D – Contaminated Oil/Graphite Burn Pad

Remediation of the five components included in Task Order #432 was performed successfully and in accordance with approved project planning and design requirements. This Task Order Completion Report summarizes remediation activities for five particular components performed during the summer of 1999. A final Project Completion Report for the MSS Project will include summaries of this Task Order and other Task Orders implemented under the MSS Project following completion of the overall MSS Project.

2.0 COMPONENT-SPECIFIC REMEDIATION SUMMARY

Preparatory actions to the five components amounted to facility/safe shutdown for each of the five components, with at least utility disconnections performed on each. Inventory removal was performed for Building 63 – KC-2 Warehouse prior to D&D mobilization. Preparatory actions were summarized in the MSS Implementation Plan.

RCRA/CERCLA integrated closures of Hazardous Waste Management Unit (HWMU) No. 28 – Trane Incinerator (Component 39B) and HMWU No. 34 – KC-2 Warehouse (Building 63) were successfully performed under the scope of Task Order #432. Since these HWMUs do not have soil components requiring further remediation (Re: Table 3-10, Operable Unit 3 Integrated Remedial Design/Remedial Action Work Plan, May 1997), this report formally closes these units. The Fernald Environmental Management Project (FEMP) will remove posted signs/barriers, stop inspections and remove the HWMUs from the FEMP's RCRA Part A/B Permit Application. Salient details of the integrated HWMU closure field activities are reported in Sections 2.3 and 2.4 of this document.

A chronology of the D&D field activities under Task Order #432 is provided in Table 2-1.

TABLE 2-1 Task Order #432 D&D Chronology

Component	Field Initiation	Field Completion
Electric Utility Tower	7/6/99	7/12/99
Hot Side Ore Conveyor (2G)	7/13/99	7/27/99
Waste Oil Decant Shelter (39G)	7/22/99	8/19/99
KC-2 Warehouse (63)	8/3/99	9/15/99
Contaminated Oil/Graphite Burn Pad (10D)	9/9/99	9/30/99

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2.1 Electric Utility Tower

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The electric utility tower was located in a non-radiologically controlled area on the east side of the FEMP's northern access road due east of the RIMIA building (82A). The tower had a height of 107 ft. above-grade with 12 ft. below grade, and consisted of structural steel (Debris Category A – Accessible Metals).

Radiological screening of steel surfaces up to eight feet from grade was performed prior to dismantlement, which revealed no radiological contamination. Due to its apparent radiologically clean condition, a local metal recycling firm under contract with the FEMP was retained to remove containerized metals for off-site recycling.

The tower was rigged according to an approved rigging plan using heavy equipment with sufficient drawbar capacity (minimum 10,000 pounds). Notching of the two leading supports and cutting of the back supports and cross braces with the trackhoe-mounted shear allowed for a hinged take-down in a safe and controlled manner to the south. Although the impact area was heavily covered with grassy vegetation, the area was wetted to prevent potential fugitive emissions.

The tower was stabilized on the ground and radiologically surveyed over its entire surface. The track-hoe-mounted shear was used to size-reduce the steel for containerization. A small portion of metal was radiologically contaminated above free release limits (approximately 27 bulked cubic feet), the remaining metal (approximately 741 bulked cubic feet) met free-release limits and was containerized in one roll-off box specifically designated for steel recycling. The box of recyclable steel was removed from the project area following containerization and transported to the recycling vendor. The metal that did not meet free-release limits was containerized and delivered to the OSDF for burial.

The tower legs were cut to a four foot height above grade, painted bright orange and flagged, per request of the Area 1 – Phase II Soil Excavation project manager. This remaining portion of the tower, including the 12 feet located below grade, will be removed during Area 1 – Phase II soil excavation.

2.2 Component 2G – Hot Side Ore Conveyor

The Hot Side Ore Conveyor (2G) provided a means for uranium ores and residues to reach the digestion process in the Ore Refinery Plant (2A). The scope of remediation included the removal of a 35-ft. drum conveyor, a transite paneled conveyor roof measuring 10 ft. x 90-ft., a drum dumper building, and approximately 120 ft. of asbestos insulated piping.

Portions of this component located below grade, which were not included in the scope of this Task Order, include the bucket elevators, screw conveyors, and the elevator pit.

Asbestos removal, surface decontamination (release cleaning), and structural dismantlement were performed in accordance with the strategies described in the MSS Implementation Plan. Surface decontamination was accomplished by surface wipe-downs and HEPA vacuuming. No wash/rinse water was generated during Component 2G D&D.

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Transite panels were encapsulated prior to removal using an approved fixative/lock-down coating. Fugitive emissions were prevented by wetting down surfaces prior to dismantlement. The disposition of waste/debris generated during the D&D of Component 2G is accounted for in Section 3 of this report.

2.3 Component 39B – Waste Oil Decant Shelter

The Waste Oil Decant Shelter (39B) was a rectangular structure consisting of a steel roof supported by steel columns over a diked concrete pad located just south of the Ore Refinery Plant. Equipment included in this component were an oil/water separator, a 375-gallon oil feed tank, an oil transfer pipe (extending from the tank to a mid-point above 102nd Street), and a sump centered on the oil feed pad. Component 39B was approximately 18 ft. x 28 ft. x 12 ft.

RCRA/CERCLA Integrated Closure of HWMU No. 28

Component 39B was also identified as the northern half of HWMU No. 28 (Trane Incinerator). The other half of this HWMU was remediated under the RCRA/CERCLA Integrated Process between January 4, 1999 and March 30, 1999 and was documented in the Project Completion Report for Decontamination of HWMU No. 50 – UNH Tanks, Hot Raffinate Building and HWMU No. 28 – Trane Incinerator (DOE 1999). Permissive documentation for this (Component 39B portion) closure activity was provided in the MSS Implementation Plan and the Task Order Implementation Schedule submitted to the regulatory agencies on July 2, 1999.

According to Section 3.17 of the MSS Implementation Plan, the Trane Incinerator was declared a HWMU because it incinerated waste oil containing characteristic levels of lead (D008) and spent 1,1,1-trichloroethane (F001/F002). During safe shutdown of Plant 2/3, between October 1996 and December 1998, one drum of hold-up material was removed along with the oil feed pump and filters. Final decontamination of the remaining items required the rinsing of the oil/water separator, the 375-gallon oil feed tank, the oil transfer pipe, and the oil feed pad and sump. Rinse water was then required to be analyzed for lead (D008) to verify that closure guidance criteria have been met.

The Rinse Water Sampling Plan for Waste Oil Decant Components and Pad Area (Doc. Control No. 1751-SP-0001, dated July 16, 1999) was prepared to address the HWMU closure sampling requirements as well as for acceptance of the rinse water discharge into the FEMP Advanced Waste Water Treatment (AWWT) facility. Sampling for AWWT discharge required a broader array of sampling parameters, including 1,1,1-trichloroethane. The following HWMU components were rinsed with potable water: 1) Oil/Water Separator; 2) 375-gallon Oil Feed Tank; 3) Oil Transfer Pipe; 4) Oil Feed Pad; and 5) Oil Feed Pad Sump. Three samples were collected of the decontamination rinseate. Sample No. 1 was solely rinse water from the oil/water separator; Sample No. 2 was solely rinse water from the oil storage feed tank; and Sample No.3 was rinse water from the oil feed pad sump. The sump provided a collection point for composite rinse water from the sump itself, the oil feed pad, and the oil transfer pipe. Figure 2-1 illustrates the location of the HWMU items and the three sampling points.

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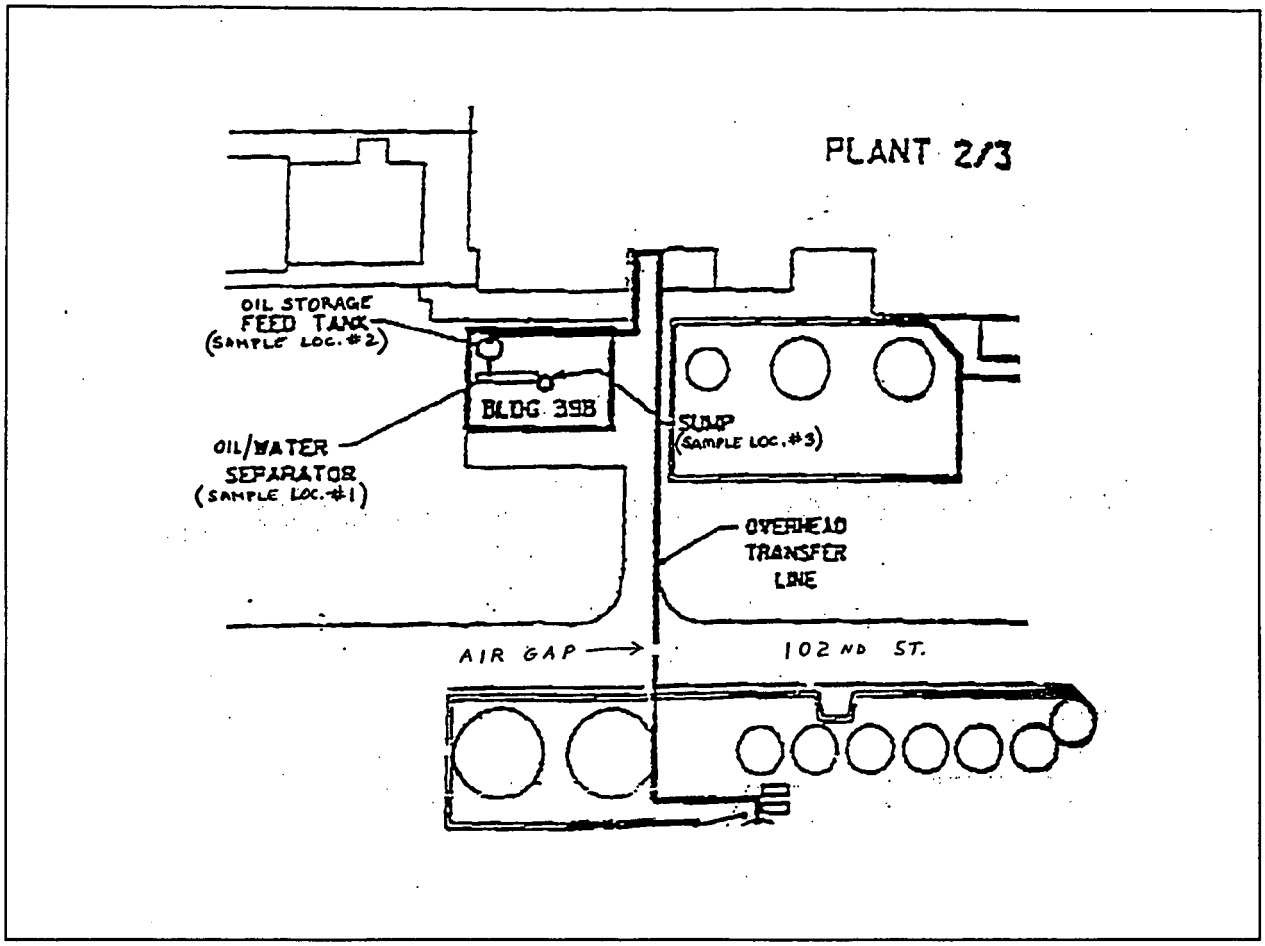
FIGURE 2-1 HWMU No. 28 Rinse Water Sampling Locations - 2590



Potable water was applied to the surfaces of the five items and the water was collected in the three sampling locations. Samples were drawn following the approved site procedure for sampling liquids and sludges (SMPL-02) and a quality control sample (Trip Blank) was collected using the approved site procedure for field quality control sampling (SMPL-21). Following sampling, rinse water was collected into two 55-gallon drums (approximately 110 gallons).

Results of rinse water sampling of HWMU No. 28 revealed that the Ohio EPA Closure Guidance Limit for lead was met for all HWMU surfaces. Rinse water-sampling results relative to the closure of HWMU No. 28 are provided in Table 2-2.

TABLE 2-2 Results of HWMU No. 28 (Component 39B) Rinse Water Sampling

Sample Location	Sample ID No.	Lead (µg/l)*
Oil/Water Separator	39B-TI-01	18.5
Oil Storage Tank	39B-TI-04	59.7
Oil Feed Pad Sump	39B-TI-07	98.6

* Ohio EPA Closure Guidance Limit for lead is 600 ug/l.

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Rinse water sampling for AWWT discharge included RCRA Metals/Total Uranium and U-235, Volatile Organics (CLP List), Alpha-Beta Screen Analysis for off-site shipment of VOC samples, and pH. Results from each of these parameters were within the acceptable range for discharge criteria for the AWWT without prior treatment. As shown in Table 2-2, results for lead (Pb) were well below the 5 mg/l Toxicity Characteristic limit established under RCRA. The analyte — 1,1,1-trichloroethane was among the multiple parameters and was not detected in each sample. The 110 gallons of rinse water was approved for discharge to the AWWT on August 9, 1999.

Following receipt of analytical results, Component 39B was dismantled in accordance with the MSS Implementation Plan. The primary method for dismantlement was use of track-hoe mounted shears. None of the debris exhibited visible process residues and therefore all debris was size-reduced and containerized for on-site disposal. Debris generated during the D&D of Component 39B was placed in the OSDF for disposal shortly after dismantlement.

Completion of the HWMU field activities satisfies decontamination requirements for HWMU No. 28 under the June 1996 Integrated RCRA/CERCLA Director's Findings and Orders (DF&O) process. The FEMP will remove posted signs/barriers, stop inspections and remove HWMU No. 28 from the FEMP's RCRA Part A Permit Application following U.S. EPA and Ohio EPA approval of this report.

2.4 Building 63 – KC-2 Warehouse

Building 63 – The KC-2 Warehouse was a designated RCRA hazardous waste storage area, HWMU No. 34. It was a single level structure located at the north end of the former FEMP Production Area. It measured 81 ft. x 346 ft. x 12 ft. high. The warehouse was constructed of concrete block and sheet metal and was subdivided into eight bays separated by 8-inch thick walls. Each bay was surrounded with a concrete berm measuring 6 inches x 6 inches that was left in place for below-grade removal with the building slab.

RCRA/CERCLA Integrated Closure of HWMU No. 34

As documented in Section 3.23 of the MSS Implementation Plan, an evaluation of HWMU No. 34 during remedial design was performed and it was determined that the floors of the building did not require decontamination rinsing for RCRA/CERCLA Integrated Closure of the HWMU. This determination was based on process knowledge, floor construction, facility spill records beginning in 1989, and the ultimate disposition of the floor debris in the OSDF. While several small (low-volume) spills had been documented in some of the eight storage bays, the floors of the facility had been sealed with impermeable coatings and the spills were promptly cleaned up.

As a good management practice for facility radiological decontamination, the floors of each bay were washed with high pressure, low volume water spray. Wash water from each bay was collected using a wet vacuum and contained in separate 55-gallon drums. A total of 8 drums amounting to approximately 440 gallons of wash water were collected. In order to discharge the wash water to the AWWT, a single composite sample from each

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of the eight drums was analyzed for Total Uranium, percent U-235, and pH. Analytical results indicated that the wash water contained 2.61 µg/l of Total Uranium, non-detectable concentrations of U-235, and a pH of 7.94. These results were within acceptable limits for on-site discharge to the AWWT without prior treatment. Approval for discharge was made on September 23, 1999.

Completion of HWMU No. 34 field activities satisfies decontamination requirements for this HWMU under the June 1996 Integrated RCRA/CERCLA Director's Findings and Orders DF&O process. The FEMP will remove posted signs/barriers, stop inspections and remove HWMU 34 from the FEMP's RCRA Part A/B Permit Application following U.S. EPA and Ohio EPA approval of this report.

Building 63 was dismantled using a trackhoe-mounted shear and continuous application of water spray to eliminate any potential for generating fugitive emissions. Dismantlement progressed east to west, bay-by-bay. All debris was containerized into roll-of boxes as it was generated and transported to the OSDF for burial.

2.5 Component 10D – Contaminated Oil/Graphite Burn Pad

The Contaminated Oil/Graphite Burn Pad consisted of a rectangular, reinforced concrete pad that contained several pieces of equipment. Component 10D, located northeast of the former Boiler Plant, was constructed with concrete berms, slopes, and grated trenches to contain any spilled liquid material and storm-water runoff. The three structures on the Pad included a steel hopper approximately 10 ft. high and 6 ft. in diameter; a steel flue-like structure (Graphite Burner), approximately 4 ft. x 4 ft. x 12 ft. high; and a brick structure (Oil Burner) approximately 4 ft. x 4 ft. 8 ft. high. The Contaminated Oil/Graphite Burn Pad provided storage for materials and equipment associated with contaminated oil and graphite burning.

The Oil Burner was used to burn used oil containing spent solvents. The unit was originally listed as a HWMU in the March 22, 1989 submittal of the FEMP's RCRA Part A Permit Application and a preliminary agreement had been reached with the U.S. EPA to address the submittal of a closure plan for this unit. However, the Oil Burner was removed from the list of HWMUs identified in the FEMP's Part A in July 1989 based on a review of records which indicated that the unit had ceased operating in July 1979 (prior to the promulgation of RCRA regulations). Additional documents were identified during reviews of this unit, which support the determination that it was used to burn listed waste.

For waste characterization and disposal purposes, the Oil Burner, the Graphite Burner, and the Hopper were evaluated prior to and during dismantlement to evaluate whether visible process residues were present. It was revealed that the fire brick from the Oil Burner and the bottom section of the Graphite Burner contained visible process residues and would therefore be containerized into white metal boxes for further waste characterization and appropriate off-site disposal. Fire brick from the Oil Burner is considered listed waste and is being stored in a tension support structure on the Plant 1 Pad.

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Equipment/systems dismantlement constituted the majority of the remediation activities for Component 10D. Some structural dismantlement occurred with the removal of a structural access platform adjacent to the Hopper. Brick removal from the Oil Burner constituted the other major activity under the concrete/masonry removal specifications.

3.0 MATERIAL MANAGEMENT

A summary of debris/waste generation from five components remediated under Task Order #432 is summarized in Table 3-1.

TABLE 3-1 Summary of Debris/Waste Generated

Debris Category & Description)	Profile/ Inventory Nos.	Volume (ft^3)	Container[a]/ Quantity	Current Storage Location	Disposition
Cat. A (Structural Steel)	Not Applicable	741	ROB[b] (2)	N/A[c]	Off-Site Recycling Vendor
Cat. A/B/D/E (Metals, Incidental Concrete)	92101	25,650	ROB (32)	N/A	OSDF
Cat. E (Concrete)	922007	17,415	ROB (42)	N/A	OSDF
Cat. G (Transite)	931961	162	Pallets (2)	Plant 4 Stockpile	OSDF
Cat. H (Asbestos)	95006	81	ISO (1)	Pad North of Bldg. 2A	OSDF
Cat I-4 (Misc. Debris)	943101	2,430	ROB (3)	N/A	OSDF
Cat. J (Lead fasteners, lead flashing)	187918	3	Drum (1)	Plant 1 Storage Pad	Off-site
Cat. J (Light ballasts)	188050	3	Drum (1)	Plant 1 Storage Pad	Off-site
Cat. C (Fire brick from Oil Burner with process residues)	178832 170950	150	WMB (2)	Plant 1 Storage Pad	Off-site
Cat. C (Process metal from Graphite Burner)	169685	75	WMB (1)	Plant 1 Storage Pad	Off-site

Footnote:
(a) ROB: Roll-off Box; ISO: Sea Land Container; WMB: White Metal Box.
(b) The two ROBs used for off-site transfer of steel for recycling are specifically designated for steel that meet unrestricted free-release criteria.
(c) N/A: not applicable; reflects that debris has been dispositioned.

Secondary waste – Rinse/Washwater was generated during the decontamination and/or HWMU closure activities with Component 39B and Building 63. Sample results and rinse/washwater disposition were reported in Sections 2.3 and 2.4, respectively.

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4.0 LESSONS LEARNED

Implementation of Task Order #432 revealed a number of lessons-learned to D&D Project Management. The following list identifies items that will be considered prior to implementing the next Task Order under the MSS Project, while also providing potential process improvements for larger scale D&D projects at the FEMP.

- Careful consideration should be made beforehand as to which type of container is used for holding rinse/washwater to be sampled and moved. It was learned that containerization of washwater into the eight 55-gallon drums from Building 63 resulted in a labor conflict due to a site labor agreement that has provisions for sampling and movement of drums by the union workforce. Typically, rinse/washwater from D&D projects is placed in polyethylene tanks, which D&D contractors are allowed to sample and move. The sampling plan had been prepared to allow non-union personnel from the site sampling team to sample and have the Construction Support Contractor, Wise Services, to move the drums to the place site of discharge following approval by the Wastewater Treatment System manager.

- Project team communication and evaluation of dismantlement plans proved to be valuable during the rigging design review process for the Electric Utility Tower. Whereas an initial engineering design specified that the tower be cut near ground level and pulled to the east, it was realized that the tower would fall into the certified soil area and block the OSDF haul road. Project team members evaluated the original proposal with all potential concerns and suggestions for improvement discussed. The result was an improved plan that required cutting the legs approximately thirty feet higher and tripping the tower to the south. This alternative dismantlement plan was discussed with the engineer and determined to be acceptable.

- Project team member participation in planning meetings allowed for increased worker safety and performance. During the planning for the demolition of Component 10D equipment it was revealed that there might be some residual beryllium present in the equipment. Additional safety measures were therefore built into the D&D work scope.

- The development of a control estimate for project costs needs to better account for safety requirements, especially when dealing with blocking roads or access to an area. During the demolition of the Electric Utility Tower and the Hot Side Ore Conveyor a significantly larger amount of labor was needed than was estimated for the control of traffic. The planning of this Task Order could have better anticipated the traffic safety support needed.

- An unexpected positive result of implementing Task Order #432 during the summer of 1999 was an additional source of debris needed for OSDF placement. In order to maximize OSDF placement efficiency, the OSDF requires transfer of a certain amount of debris on a daily basis. Since a number of significant buildings (64, 65, 20H, etc.) were not dismantled as

OSDF planners projected when the current placement contract was awarded, a potential shortage of debris was to occur. However, recent MSS D&D work has generated previously unexpected debris for OSDF placement and helped maintain OSDF workforce efficiency.

- Downsizing of certain materials needed to meet OSDF waste acceptance criteria proved to be significantly more labor intensive than originally estimated. One such debris type is the synthetic liner that covered the roof of Building 63. With the trackhoe-mounted shear being used to dismantle the building, segregation, sizing, and containerization of the liner was much more time-consuming than anticipated. Future control estimates will have to account for greater time to remove and segregate synthetic roof liners.

- Back-up Equipment: With the breakdown of a front-end loader during the fast-paced dismantlement of Building 63, debris containerization would have been significantly delayed. Repair of equipment onsite does not hold the prospect of being completed in a quick timeframe. Fortunately, for Task Order #432, a backup loader became available and allowed the Building 63 D&D to be completed on time.

5.0 REFERENCES

U.S. Department of Energy, 1997, *Operable Unit 3 Integrated Remedial Design/Remedial Action Work Plan*, Final, prepared by Fluor Daniel Fernald, Cincinnati, Ohio

U.S. Department of Energy, 1998, *Operable Unit 3 Integrated Remedial Action Miscellaneous Small Structures Implementation Plan for Above-Grade Decontamination and Dismantlement*, Final, prepared by Fluor Daniel Fernald, Cincinnati, Ohio.

U.S. Department of Energy, 1999, *Project Completion Report for Decontamination of HWMU No. 50 – UNH Tanks, Hot Raffinate Building and HWMU No. 28 – Trane Incinerator,* Final, prepared by Fluor Daniel Fernald, Cincinnati, Ohio.